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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/384,186	08/27/1999	HIROAKI MATSUYAMA	12922	7473

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400 GARDEN CITY PLAZA  
GARDEN CITY, NY 11530

EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 08/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

09/384,186

Applicant(s)

MATSUYAMA, HIROAKI

Examiner

HOAN C. NGUYEN

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) 2,4-17 and 21-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 7, 2002 has been entered.

Claims 2, 8-9, 17 and 23 have been cancelled. Claims 4, 21-22, 30-31 and 41 are non-elected.

### ***Election/Restrictions***

Applicant's election with traverse of Species A and sub-species (a), claims 1, 3, 5-7, 10-16, 18-20, 24-29, 32-40 and 42, in Paper No. 17 is acknowledged.

Applicant's arguments regarding the restriction requirement have been considered; however, the traversal was on the grounds that there is no serious burden on the Examiner in examining all of claims. This is not found persuasive since the species A having "an insulating film disposed between the orientation layer and pixel electrode" (Fig. 1-3) is different from species B having the orientation layer formed on

an pixel electrode with an insulating film disposed between pixel electrode and wirings/gate insulating layer (Fig. 4-5).

Therefore, the requirement is deemed proper and is considered to be Final.

However, claims 5-7, 10-16, 24-40 and 42 are drawn to non-elected species B since the independent claims 5, 25, 34 and 42 has not included “an insulating film disposed between the orientation layer and pixel electrode” according to Figures 4-5, in which the orientation layer formed on an pixel electrode without an insulating film therebetween [no insulating film between the orientation layer and pixel electrode, therefore, the orientation layer is formed directly on the pixel electrode as Figs. 4-5 shown].

Although claims 5, 25, 34 and 42 are claimed broader than claims 1 and 18, claims 5, 25, 34 and 42 could not be generic of claims 1 and 18 since Figures 4-5 (claims 5, 25, 34 and 42) could not be generic of Figures 1-3 (claims 1 and 18) with an insulating layer forming between pixel electrode and orientation film. Figures 1-3 and Figures 4-5 are drawn to different embodiments.

Therefore, claims 5-7, 10-16, 24-40 and 42 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected inventions and species, there being no allowable generic or linking claim.

Only claims 1 and 18 recited limitation “an insulating film disposed between the orientation layer and pixel electrode” of the elected species A. Therefore, claims 1, 3 and 18-20 are still in consideration for elected species A and sub-species (a).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the prior art (Fig. 6) admitted by applicant in view of Shiomi et al. (US6330048B1).

Applicant admits (Fig. 6) a multi-domain alignment active-matrix liquid crystal display device comprising

- first and second transparent insulating plates 1/2 arranged to oppose each other;
- said first plate having disposed thereon a plurality of scanning lines and a plurality of signal lines, thin film transistors provided in the vicinity of intersections between the scanning lines and signal lines, and pixel electrodes connected to the thin film transistors. All these features are enhanced for control signal at pixel electrode 22.
- a liquid crystal being sandwiched between the opposing first and second plates and being control led by voltage impressed across said pixel electrodes and said counter electrodes;
- an insulating film 25 formed into a curved surface over on each pixel electrode.

However, the admitted prior art fails to disclose

- said second plate having a black matrix provided with openings at areas that oppose said pixel electrodes, a color layer and counter electrodes provided so as to oppose said pixel electrodes;
- an orientation layer is provided on each pixel electrode of said first plate via an insulating film, wherein said orientation layer is formed into a curved surface and orient molecules of the liquid crystal aligned in a direction normal to the curved surface of said orientation layer, and
- at least one columnar spacer having a diameter varying along its axis is provided between the two opposing plates for regulating a panel gap therebetween, said at least one columnar spacer disposed approximately at a center of a pixel.

It is conventional that an active-matrix liquid crystal display device comprises

- the second plate having a black matrix provided with openings at areas that oppose said pixel electrodes, a color layer and counter electrodes provided so as to oppose said pixel electrodes for displaying color image;
- an orientation layer is provided on an curved insulating film (claim 19), wherein said orientation layer is formed into a curved surface and orient molecules of the liquid crystal aligned in a direction normal to the curved surface of said orientation layer for aligning liquid crystal molecules.

Shiomi et al. (US6330048B1) teach (Fig. 7A-B) an active-matrix liquid crystal display device comprises at least one columnar spacer having a diameter varying along

its axis is provided between the two opposing plates for regulating a panel gap therebetween, said at least one columnar spacer disposed approximately at a center of a pixel to secure multi-domain alignment (Fig. 7B) according to claim 20 for axial symmetry thus enhancing the display quality.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify an active-matrix liquid crystal display device as applicant admitted in the prior art with (a) the second plate having a black matrix provided with openings at areas that oppose said pixel electrodes, a color layer and counter electrodes provided so as to oppose said pixel electrodes for displaying color image; (b) an orientation layer is provided on an curved insulating film (claim 19), wherein said orientation layer is formed into a curved surface and orient molecules of the liquid crystal aligned in a direction normal to the curved surface of said orientation layer for aligning liquid crystal molecules; (c) an active-matrix liquid crystal display device comprises at least one columnar spacer having a diameter varying along its axis is provided between the two opposing plates for regulating a panel gap therebetween, said at least one columnar spacer disposed approximately at a center of a pixel to secure multi-domain alignment (Fig. 7B) according to claim 20 for axial symmetry thus enhancing the display quality.

***Allowable Subject Matter***

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: there is no prior art teaches the orientation layer formed on said first plate defines a cavity recessed toward said first plate in a cross section taken along a line normal to said plate; wherein at least one columnar spacer disposed approximately at a center of a pixel has a diameter that becomes progressively smaller in the direction of said second plate.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN  
Examiner  
Art Unit 2871



TOANTON  
PRIMARY EXAMINER

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July 16, 2003